



A review of *lotasperma* (Asteraceae: Astereae)

A.R. Bean

Queensland Herbarium, Brisbane Botanic Gardens, Mt Coot-tha Road, Toowong, 4066, Queensland Australia;
e-mail: tony.bean@des.qld.gov.au

Introduction

The genus *lotasperma* G.L.Nesom (Nesom 1994) was erected for two endemic Australian species that were previously classified in the genus *Erigeron* L. Nesom (loc. cit.) showed quite clearly that these species were misplaced in *Erigeron*, and that they differed significantly from the related Australian genera *Vittadinia* A.Rich., *Ixiochlamys* F.Muell. ex Sond., *Dichromochlamys* Dunlop, *Peripleura* (N.T.Burb.) G.L.Nesom and *Camptacra* N.T.Burb. Nesom's treatment, while establishing the need for a new genus, and satisfying the nomenclatural requirements, is deficient in several ways: there were no descriptions for the species, no types were seen and no lectotypes chosen, there was no key to species, no distribution map, no specimens cited and the illustration of the pappus is misleading and attributed to the wrong species.

In this paper, comprehensive species descriptions, specimen citations and an identification key are provided for the first time, and both species names are lectotypified. A distribution map is provided, and both species are illustrated.

Although not stated by Nesom (1994), *lotasperma* appears to differ from all of the genera mentioned above by the uniserial pappus, the very small achenes, and the very short ligules of the ray florets. These characters are sufficient to diagnose and circumscribe the genus.

Abstract

This paper provides species descriptions, specimen citations, identification key and illustrations for two species of the genus *lotasperma* G.L.Nesom, namely *l. australiense* G.L.Nesom and *l. sessilifolium* (F.Muell.) G.L.Nesom. Both species names are lectotypified, and a distribution map is included.

Keywords: lectotype, identification key, illustration.

Materials and methods

The paper is based on a morphological examination of specimens at BRI, specimens received on loan from MEL, NT, DNA and PERTH, specimens examined at NSW in January 2018, images of a specimen at CANB, and an image of a type from K (Herbarium Catalogue 2018). All measurements are based on dried material, except for the florets, which were measured from material reconstituted in boiling water.

Taxonomy

lotasperma G.L.Nesom, *Phytologia* 76: 144 (1994).

Type: *I. australiense*.

Annual herbs. Stems ± terete, but with faint longitudinal ridges extending from the base of each leaf, sessile oil glands absent. Leaves alternate, sessile. Capitula terminal, in corymbose or paniculate clusters, pedunculate, peduncle with a few leaf-like bracts along its length. Involucral bracts entire, outer bracts green, inner bracts white to pale yellow. Receptacle flat to slightly convex, without paleae. Ray florets multiseriate, female, corolla tube glabrous; ligules tightly coiled on dried material. Disc florets bisexual, yellow; corolla tube glabrous; anthers not basally caudate. Anthers strongly flattened, with broad glabrous thickened lateral ribs; surface with numerous antrorse transparent twin-hairs throughout; carpopodium conspicuous. Pappus a single whorl of barbellate bristles, fused at the base.

1. *lotasperma australiense* G.L.Nesom,
Phytologia 76: 146 (1994), as '*australiensis*'

Erigeron ambiguus F.Muell., Trans. Proc. Philos. Inst. Victoria 3: 58 (1859), nom. illeg. non Nuttall (1818). Type: QUEENSLAND. Gilbert River, 1856, F. Mueller (lecto: MEL 1553030, here chosen; isolecto: K 000890331).

Erect herb to 45 cm high. Stems with sparse indumentum of patent eglandular hairs to 0.3–0.5 mm long, and a

dense covering of shorter gland-tipped hairs. Leaves elliptic to lanceolate or oblanceolate, 9–36 mm long, 2–11 mm wide, oil glands absent; apex acute; base cuneate; margins entire or sparsely dentate, with teeth 0.2–2.0 mm long; venation obscure or faintly visible throughout, mostly pinnerved, but parallel-veined near base; dense indumentum of patent glandular hairs on both surfaces. Capitula 4–5 mm long, 6–8 mm diameter. Peduncles 12–32 mm long, with dense glandular hairs 0.05–0.10 mm long. Involucral bracts 30–40, graduated in length, 3–5-seriate; outer bracts linear to narrowly-lanceolate, 2.1–2.8 × 0.3–0.4 mm, with many short glandular hairs on outer surface, apex acute to acuminate; inner bracts linear, 3.5–3.7 × 0.3–0.4 mm, sparingly glandular on outer surface, apex ciliate. Receptacle 2.3–3.6 mm across. Ray florets 60–100, corolla tube 1.9–2.1 mm long; ligules 0.8–1.4 mm long, white, apex obtuse. Disc florets 7–10, corolla tube 2.2–2.4 mm long, corolla lobes c. 0.25 mm long, acute. Achenes narrowly obovate in outline, 0.9–1.0 mm long, 0.35–0.40 mm wide. Pappus bristles 14–20, each 2.2–2.3 mm long; barbellae c. 0.05 mm long. (Figure 1a–c).

Selected specimens examined: WESTERN AUSTRALIA. Kimberley. King River road, 7.8 km N of Gibb River road, El Questro, 19.vi.2008, G. Byrne 3410 (PERTH); between Picaninny car park and Western Creek, 13.vi.1993, I. Solomon 804 (PERTH); 1 km SW of camp at Diversion Dam, Kingston Rest, 16.vii.2001, D. Edinger DJE2595 (PERTH); Mount Elizabeth track to Munja, 28.vii.1996, K.F. Kenneally 11816 (PERTH); Bungle Bungles; massive above Picaninny Gorge, 5.vii.1989, K. Menkhorst 463 (DNA, PERTH); New Cockatoo sand site, CSIRO Kununurra, 7.vii.1978, M.H. Andrew 94 (CANB, DNA, NT). NORTHERN TERRITORY. 3.4 km along Edith Falls road, NW of Katherine, 28.v.2005, A.R. Bean 23918 (BRI, DNA); 20 miles [32 km] W of Borroloola Station, 26.vii.1948, R.A. Perry 1773 (BRI, DNA); Cox River station, 23.vii.1977, P.K. Latz 7214 (DNA, NT); Spirit Hills Conservation area, N of Nancy's Gorge, 25.viii.1996, I. Cowie 7238 & C. Boehme (DNA, MEL); Limmen N.P., Billengarah block, in valley at W edge of Tawallah Range, 6.viii.2009, B.M. Stuckey 437 (DNA); west side of Skull Island, Pellew Islands, 10.viii.2009, J. Westaway 3066 (DNA); Keep River N.P., 14.viii.2008, K.G. Brennan 7798 (DNA). QUEENSLAND. Burke District: Adels

Key to the species of *lotasperma*

- 1 Leaf bases cuneate; upper leaves usually entire; receptacle 2.3–3.6 mm across; peduncle with short glandular hairs only..... *I. australiense*
- 1 Leaf bases amplexicaule or obtuse; upper leaves toothed; receptacle 4.5–7.0 mm across; peduncle with predominantly long eglandular hairs, and some short glandular hairs..... *I. sessilifolium*

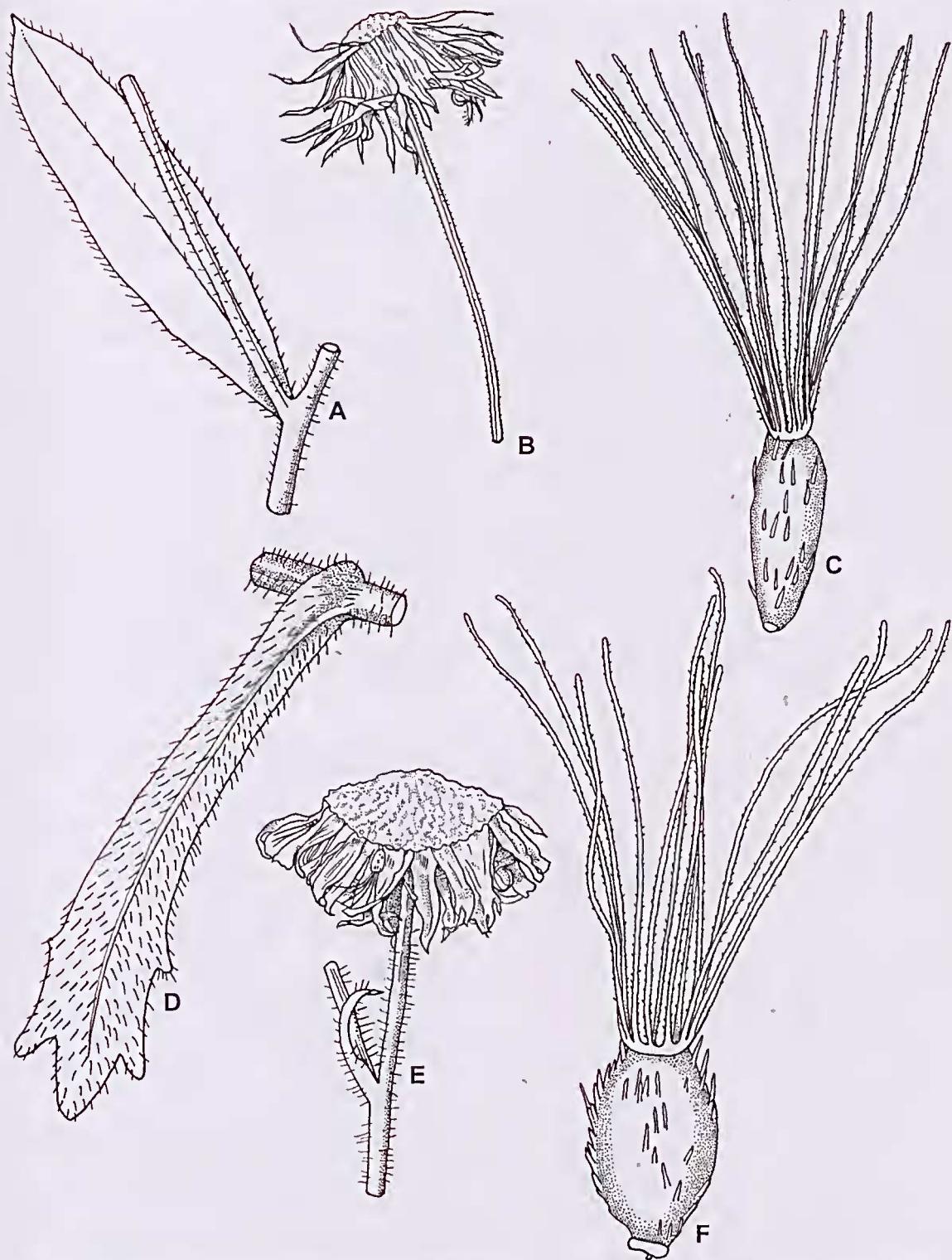


Figure 1. a-c. *lotasperma austroliense* (Cumming 24470, BRI AQ739926). a. leaf $\times 4$; b. peduncle, receptacle and involucral bracts $\times 4$; c. achene and pappus $\times 30$. d-f. *lotasperma sessilifolium* (Latz 14697, MEL0279545A). d. leaf $\times 4$; e. peduncle, receptacle and involucral bracts $\times 4$; f. achene and pappus $\times 30$.

Grove, via Camooweal, 22.vi.1950, A. de Lestong 481 (BRI); Bowthorn Station, 7.vi.2009, R. Booth LH15-18 & D. Kelman (BRI). Cook District: 28.9 km by road W of Wakooka Outstation, 27.x.2006, K.R. McDonold 5932 et al. (BRI); Horseshoe Lagoon entrance road, Lakefield N.P., 24.vii.2010, K.R. McDonold 9661 & J. Covacevich (BRI); Kutcheria Station, c. 70 km NE of Croydon, 21.ix.2006, R. Cumming 24470 (BRI). North Kennedy District: Sawpit Creek, White Mountains N.P., 23.vii.1992, A.R. Beon 4820 (BRI). South Kennedy District: c. 35 km E of Lake Buchanan, 17.vi.1998, E.J. Thompson BUC2064 & G.P. Turpin (BRI).

Distribution and habitat: Endemic to Australia. Occurring in the Kimberley region of Western Australia, the "Top End" of the Northern Territory, and northern Queensland, as far east as Lake Buchanan (Figure 2). It grows on sandy soils in open eucalypt woodland. Sites are typically seasonally damp, but not swampy.

Phenology: Flowering and fruiting specimens have been collected from May to September.

Conservation status: A very widespread species. A conservation coding of Least Concern is recommended (IUCN 2012).

Notes: Apart from the differences cited in the key below, *I. australiense* differs from *I. sessilifolium* by the inner involucral bracts 0.3–0.4 mm wide (0.6–0.9 mm

wide for *I. sessilifolium*), the 7–10 disc florets (27–36 for *I. sessilifolium*), and the narrower achenes, 2.5–3 times longer than wide (c. 2 times longer than wide for *I. sessilifolium*).

This species is sometimes misidentified as *Blumea diffusa* R.Br. ex Benth. or *B. integrifolia* DC., as the plant size, capitulum size and involucral bracts are similar. However, the female florets of *Blumea* spp. are not ligulate.

2. *Iotasperma sessilifolium* (F.Muell.) G.L.Nesom, *Phytologia* 76: 146 (1994), as 'sessilifolia'

Erigeron sessilifolius F.Muell., Fragm. 11: 100 (1880). **Type:** NORTHERN TERRITORY. Depot Pool [SW of Mataranka], 1879, A. Forrest s.n. (lecto, here chosen: MEL1553028; isolecto: MEL1553026, NSW569017).

[*Erigeron ambiguus*, Lawrence (1992, p. 945), misapplied]

Illustrations: Jessop 1981, *Flora of Central Australia*, p. 376, fig. 475, as *Erigeron sessilifolius*; Cooke 1986, *Flora of South Australia Part 3*, p. 1467, as *Erigeron sessilifolius*; Lawrence 1992, figs. 268, 288, as *Erigeron ambiguus*; Nesom 1994, p. 145, as *Iotasperma australiensis*.

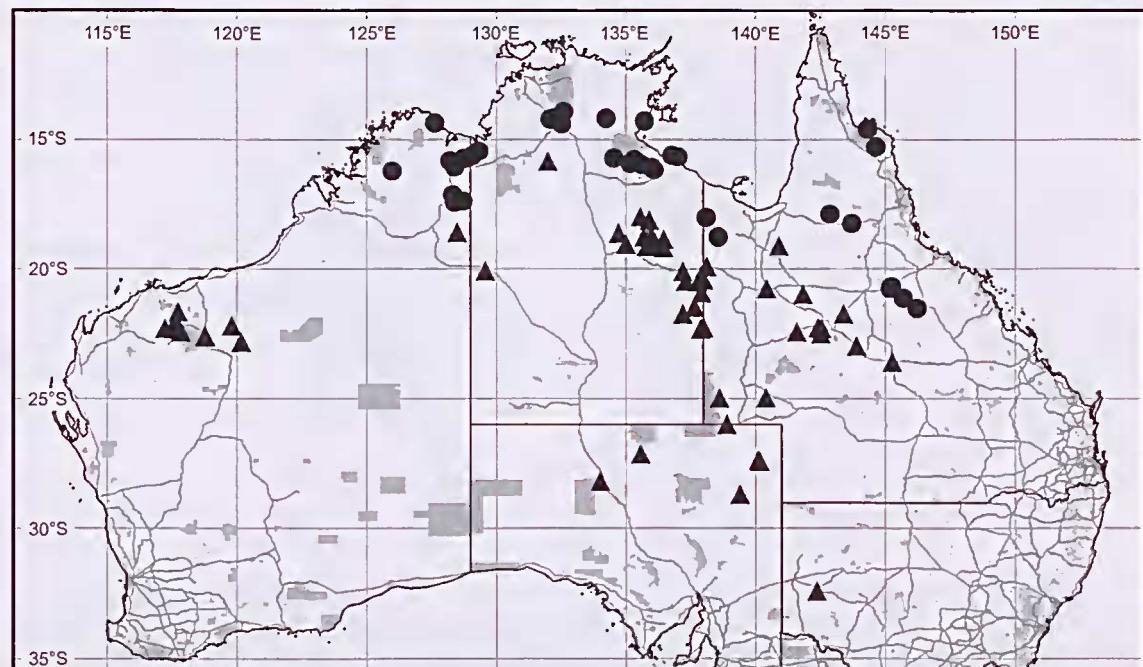


Figure 2. Distribution of *Iotasperma australiense* (circles) and *I. sessilifolium* (triangles).

Decumbent or erect herb to 30 cm high. Stems with dense indumentum of patent eglandular hairs 0.9–1.5 mm long, and a sparse covering of shorter gland-tipped hairs. Leaves oblanceolate, 14–61 mm long, 4–15 mm wide, oil glands absent; apex acute; base obtuse to amplexicaule; margins conspicuously dentate, with teeth 1–3 mm long; venation obscure; dense indumentum of antrorse eglandular hairs on both surfaces. Capitula 4.5–6.0 mm long, 8–9 mm diameter. Peduncles 8–30 mm long, with dense eglandular hairs 0.5–0.8 mm long and moderately dense glandular hairs 0.05–0.10 mm long. Involucral bracts 30–40, subequal in length, 2–4-seriate; outer bracts narrowly-elliptic, 2.5–3.6 × 0.5–0.7 mm, with short glandular hairs and longer eglandular hairs on outer surface, apex acuminate; inner bracts narrowly-elliptic, 2.9–4.1 × 0.6–0.9 mm, sparsely glandular on outer surface, apex acuminate, margins hyaline. Receptacle 4.5–7.0 mm across. Ray florets 60–100, corolla tube 1.5–2.1 mm long; ligules 1.3–2.0 mm long, lilac to blue or white, apex minutely retuse. Disc florets 27–36, corolla tube 2.4–2.7 mm long, corolla lobes 0.3–0.4 mm long, acute. Achenes elliptical in outline, 0.8–1.0 mm long, 0.4–0.5 mm wide. Pappus bristles 14–20, each 1.8–2.3 mm long; barbellae c. 0.05 mm long. (Figure 1d–f).

Selected specimens examined: WESTERN AUSTRALIA. Munjina Claypan, Juna Downs station, 15.ix.199B, 5. van Leeuwen 3888 (DNA, PERTH); c. 17.8 km W of intersection of Nanutarra to Munjina road and Hamersley road, 12.viii.2011, E. Ridley & B. Morgan BE5ER015 (BRI, PERTH); 0.9 km west from the Wittenoom to Nanutarra road on the track to Pindering Well, Hamersley Station, 2.ix.1991, M.E. Trudgen MET10649 & S.M. Maley (PERTH); Silvergrass Plain, 71 km NW of Tom Price, 11.ix.2007, E. Thomo ET1377 (PERTH); c. 8 km N of Ethel Creek homestead, 2B.viii.1995, A.A. Mitchell PRP449 (PERTH); 18 km NE of Bonnie Creek homestead and 19 km SW of Nullagine, 22.viii.2008, B. Morgan BMor1385 (PERTH). NORTHERN TERRITORY. Sanctuary Swamp, 4.vii.19B0, J.R. Moconochie 2459 (BRI, DNA, NT); 26 mile waterhole, Austral Downs Station, 20.vii.1971, N. Henry 271 (BRI, NSW, NT); Tobermory homestead, 21.v.1972, C. Dunlop 2557 (BRI, NSW, NT); Brunette Downs homestead, 25.viii.19B5, P.K. Lotz 10093 (DNA, MEL, NT); Button Waterhole, Gordon Downs station, 20.vii.1973, P.K. Lotz 4015 (DNA, NSW, NT, PERTH); Connells Lagoon Reserve, 24 Aug 19B9, B.G. Thomson 3333 (DNA, NT); Shady camp stock yards, Burramurra, 20° 28'S 137° 18'E, 1B.viii.1983, B.G. Thomson 434 (NT); No. 21 Bore, Alroy Downs, 26.vi.1975, J. Must 1436

(DNA); Lake Nash Waterhole, Lake Nash station, s.d., B.W. Strong 437 (DNA, NT). QUEENSLAND. Burke District: turnoff to Toorak Research Station, c. 40 km S of Julia Creek, 10.x.2007, J. Silcock 67 (BRI); bed of Flinders River crossing at Cleanskin Hut, 44.5 km N of Canobie HS, 6.viii.2004, I.D. Fox IDF3185 & G. Wilson (BRI); Cloncurry, s.d., E. Polmer 34 (BRI). Mitchell District: Barcaldine, vii.197B, G. Warren s.n. (BRI, AQ315437); Morella, Longreach Shire, 3.vi.1994, B.A. Fronzmann BF32 (BRI). Gregory North District: Neuragully Waterhole, 'Monkira', c. 120 km SE of Bedourie, 7.v.2007, A.R. Beon 26316 (BRI, CANB, NSW). NEW SOUTH WALES. Kinchega National Park, billabong of Darling River, 16.v.1979, K. Poijmons 2754 (CANB).

Distribution and habitat: Endemic to Australia. Ranging from the Pilbara region of Western Australia, throughout the southern two-thirds of Northern Territory, northern South Australia, western New South Wales and the western half of Queensland, as far east as Barcaldine (Figure 2). It grows in depressions, in swamps, on floodplains or around bores, in grassland or hermland communities. Soils are clays or clay-loams.

Phenology: Flowering and fruiting specimens have been collected from May to October.

Conservation status: A very widespread species. A conservation coding of Least Concern is recommended (IUCN 2012).

Notes: Mueller (1880) did not cite any specimens in the protologue for *Erigeron sessilifolius*, but a gathering by Alexander Forrest (now mounted on two sheets at MEL) was available to him before the publication date, and one label bears the notation 'Erigeron sessilifolius n. sp.' in what appears to be Mueller's handwriting. This gathering matches the description in the protologue very well.

Nesom (1994) included an illustration of the pappus for *I. sessilifolium* (as *I. austroliense*), where many bristles are less than 0.5 mm long, and some bristles almost completely lacking. These bristles have been damaged; undamaged pappus bristles are all equal in length, and 1.8–2.3 mm long. They are very fragile however, and broken bristles such as those illustrated by Nesom (1994) can often be found.

As the description and illustration of *Erigeron ambiguus* given in Lawrence (1992) are based on a specimen from Gordon Downs (*Latz 4015*, cited above), they are referable to *lotasperma sessilifolium*.

Acknowledgements

I thank the Directors of MEL, DNA, NT and PERTH for specimen loans of *lotasperma*, and the Director of NSW for access to the collection. Will Smith (BRI) provided the illustrations and edited the distribution map. Brendan Lepschi kindly sent high quality images of a specimen at CANB.

References

- Herbarium Catalogue (2018). The Herbarium Catalogue, Royal Botanic Gardens, Kew. Published on the Internet <http://www.kew.org/herbcat> [accessed 28 March 2018].
- IUCN (2012). International Union for the Conservation of Nature. IUCN Red List Categories and Criteria, version 3.1, 2nd ed. <https://portals.iucn.org/library/efiles/documents/RL-2001-001-2nd.pdf> Accessed 10 December 2017.
- Lawrence, M.E. (1992). 'Erigeron', in J.R. Wheeler (ed.), *Flora of the Kimberley Region*, p. 945. Department of Conservation and Land Management: Como, W.A.
- Mueller, F. (1880). 'Erigeron sessilifolius', in *Fragmenta Phytographiae Australiae* 11, 100–101. J. Ferres: Melbourne.
- Nesom, G.L. (1994). Taxonomic dispersal of Australian *Erigeron* (Asteraceae: Astereae). *Phytologia* 76(2), 143–159.